

REMARKS

The Examiner has rejected claim 1 as being anticipated by Kemner et al. However, the relevance of Kemner to the present invention is limited, partly due to an error in claim 1 as filed. The final integer of claim 1 as filed reads: ‘control means responsive to the image signals and/or the composite image data to control the operation of the drive means according to the intensity of the imaging beam.’ In fact, the description does not relate to the controlling of the operation of the drive means in this way, as correctly pointed out by the PCT examiner in the IPER for the corresponding International application (see last two pages of the IPER). The word “drive” should be replaced with “signal processor”, so that the claim relates to the invention as described on pages 16 to 21 of the description. Similarly, claim 8 as filed incorrectly refers to the generation of drive control signals to vary the speed of the drive means, and we propose to amend this claim as well, as indicated in the attached draft amended claims.

Regarding the objections in the IPER as to lack of novelty of the invention, we have further amended claim 1 to incorporate the subject matter of claim 3. The concept of a plurality of cameras arranged adjacent to one another, with adjacent cameras having overlapping fields of coverage as defined in claim 3 (and further defined in claim 4) is not disclosed in US 4,179,100. The passage cited by the Examiner (column 13, lines 5 to 31) and the corresponding drawings (Figures 14(a) and 14(b)) refer to photo-diode arrays 254, 256 positioned in a staggered fashion.

One of the dictionary meanings of the word “staggered” is “overlapping”, but this is not what is shown. Rather, Figures 14(b) shows adjacent photodiode arrays abutting one another in an alternating configuration, with the lines of abutment of adjacent

elements being transverse to the long axis of an associated scintillator 262. In other words, the adjacent elements shown in Figure 14(b) are “arranged to alternate”, which is the other, applicable dictionary meaning of “staggered” in the context of this passage. There is no explanation of the purpose of the staggered, alternating arrangement, and no suggestion or disclosure of overlapping fields of coverage of the adjacent photodiode arrays.

The feature of the camera array being arranged so that the fields of coverage of adjacent cameras overlap in a direction transverse to the direction of movement of the camera array is advantageous, as the camera array then provides full coverage of the imaging zone without discontinuities.

In the light of the above amendment, we submit that the Examiner’s arguments with regard to the remaining claims are moot. With regard to new claim 3, the preferred parallelogram shape of the active areas of the cameras assists in creating a narrow, well-defined transition zone between the fields of coverage of adjacent cameras.

In this regard, paragraph 4 on page 14 of the present application makes it clear that the CCD cameras of the present invention comprise multiple rows and columns of pixels, with the pixel rows being orientated perpendicular to the scanning direction. Electrons generated by incident x-rays are integrated in the pixel well during the time delay between the pixels phase clocks, and are moved to the next row by the phase clocks. In each subsequent row, additional electrons are generated by incident x-rays, and the effective imaging exposure period is thereby lengthened. The pixels are clocked in accordance with the mechanical movement of the x-ray source.

We have amended claim 1 to specify that each camera comprises rows and columns of pixels. It will be appreciated that the overlapping of the areas of coverage of adjacent cameras in a direction transverse to the direction of scanning or movement of the camera array is mainly relevant in the context of a two-dimensional pixel array comprising rows and columns of pixels.

In this context, it will be appreciated that there will tend to be a degree of misalignment with relative to one or both of the X and Y axes of the respective cameras, and the subject matter of original claims 5 to 8 relates to digital signal processing designed to compensate for such misalignment. There is no disclosure or suggestion of such an arrangement in the cited prior. Likewise, the subject matter of original claims 12-14 is not suggested or disclosed by the reference, and is particularly applicable to the two-dimensional CCD cameras of the invention.

The Examiner has not suggested that Kemner et al. is relevant to the subject matter of original claim 3. However, we respectfully submit that the examiner is mistaken in his interpretation of Karellas. Karellas does disclose the use of multiple CCDs, for example, in column 24, line 22 onwards, and Figures 26 to 32. However, it is interesting to note that the illustrated arrays are linear or rectangular arrangements of CCDs which are butter or "tilted" together (see column 24, lines 22 to 28). Karellas in fact discusses the problems of making a seamless joint between adjacent CCDs. Mention is made of moving the sets of CCDs so that there is some overlap between fields of exposure (see column 24, lines 43 to 53). However, it should be appreciated that the mentioned overlapping relates to successive exposures, not to the physical structure of the CCD camera elements. In this regard, Figure 22A referred to by the Examiner does

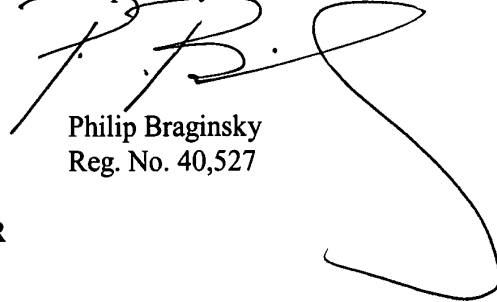
not show a camera array at all. In column 3, lines 55 to 56, it is stated: "FIGS. 22A-22B illustrate scanning or stepped imaging procedures." Figure 22A shows an imaging field composed of a series of slightly overlapping individual images 620 that are acquired by a continuous scan or stepped imaging sequence along the rectilinear path 622 that is shown in Figure 22B (see column 22, lines 31 to 35).

In the present invention as now claimed, a camera array is provided which comprises a plurality of cameras arranged adjacent one another in such a way that the fields of coverage of adjacent cameras overlap in a direction transverse to the direction of movement of the camera array in use. As described on page 14, fourth paragraph, each camera comprises rows and columns of pixels (that is, a two-dimensional array of pixels). As per original claim 4, each camera preferably has an active area with a parallelogram shape, so that the adjacent ends of the parallelograms overlap in a relatively narrow transition zone extending transversely to the direction of scanning (see Figure 9 of the present application). The result of this arrangement is that there is effectively no gap between the adjacent CCD cameras, and the signal processor means and compensation algorithm of original claims 5 to 7 operate to compensate for any misalignment of the image pixels in the x and y-axes arising from relative misalignment of the individual CCD cameras in the camera array.

We submit that the claims as amended are clearly distinguished over the prior art, which completely fails to show the claimed camera array structure. No additional fee is

required and no new matter has been added. The remaining references cited by the Examiner are respectfully deemed not applicable by the Applicants.

Respectfully submitted,

A large, stylized handwritten signature in black ink, appearing to be 'P. Braginsky', is written over the typed name and registration number.

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